

In the Claims:

Cancel claims 2-4, 12-14, 23-27, 49-52 and 58.

Please amend claims 1, 10, 11, 53, 54, 57, 59 and 60, as follows:



- D1
1. (thrice amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a gas-phase reactive halide composition comprising [a halide component selected from the group consisting of SF₆, SiF₄, Si₂F₆, SiF₂ radical, SiF₃ radical, and] XeF₂ [, wherein the halide component is present] in an amount effective to remove sufficient residue from the microelectronic device structure to reduce noble metal residue-caused deficiencies in the operation of the microelectronic device.

D2 7/10

(amended) The method according to claim 1, wherein [the gas-phase reactive halide composition comprises XeF₂ and] XeF₂ in the reactive halide composition [comprising XeF₂] is generated by an inherent vapor pressure of XeF₂.

8/1

(amended) The method according to claim 1, wherein [the gas-phase reactive halide composition comprises XeF₂ and] XeF₂ in the reactive halide composition [comprising XeF₂] is generated by sublimation of solid crystalline XeF₂.

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38/53

D3

(twice amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a gas-phase reactive halide composition comprising [a halide component selected from the group consisting of SF₆, SiF₄, Si₂F₆, SiF₂ radical, SiF₃ radical, and] XeF₂, to remove the residue, wherein the microelectronic device structure is disposed in a chamber, said method further comprising:

- (a) evacuating the chamber;

- (b) filling the chamber with a cleaning gas comprising the reactive halide composition; and
- (c) retaining the reactive halide composition in the chamber to react with the residue; and
- (d) sequentially repeating said steps of filling and evacuating to effect removal of the noble metal residue from the microelectronic device structure.

39/4.
D3 (twice amended) A method for removing from a microelectronic device structure a noble metal residue comprising at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a gas-phase reactive halide composition comprising [a halide component selected from the group consisting of SF₆, SiF₄, Si₂F₆, SiF₂ radical, SiF₃ radical, and] XeF₂, wherein the halide component is present in an amount and for a time sufficient to remove sufficient residue to reduce noble metal residue-caused deficiencies in the operation of the microelectronic device structure.

42/57.
D4 (amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a gas-phase reactive halide composition comprising [a halide component selected from the group consisting of SF₆, SiF₄, Si₂F₆, SiF₂ radical, SiF₃ radical, and] XeF₂, in an amount effective to at least partially remove the residue.

43/59.
D5 (amended) A method for removing from a microelectronic device structure a noble metal residue including at least one metal selected from the group consisting of platinum, palladium, iridium and rhodium, the method comprising contacting the microelectronic device structure with a gas-phase reactive halide composition consisting essentially of [a halide component selected from the group consisting of SF₆, SiF₄, Si₂F₆, SiF₂ radical, SiF₃ radical, and] XeF₂, in an amount effective to at least partially remove the residue, and optionally including:

- (a) an agent selected from the group consisting of Lewis bases and electron back-bonding species; and/or
- (b) selected from the group consisting of carbon monoxide, trifluorophosphine, and trialkylphosphines.